WE CLAIM:

1. A method for protecting a metal surface from galling and corrosion, said method comprising the step of:

providing a dry film on the metal surface, the dry film comprising a binding intrinsically conductive polymer;

wherein the intrinsically conductive polymer itself has lubricant properties and is capable of binding solid lubricants to the metal surface.

2. The method according to claim 1, wherein the dry film includes a solid lubricant.

3. The method according to claim 1, wherein the dry film is formed by application to the metal surface of a liquid solution of the intrinsically conductive polymer.

4. The method according to claim 2, wherein the dry film is formed by application to the metal surface of a liquid composite comprising the intrinsically conductive polymer and the solid lubricant in a solvent.

5. The method according to claim 4, wherein the dry film is formed by drying a wet film of the liquid composite which has been applied on the metal surface with a brush.

6. The method according to claim 4, wherein the dry film is formed by drying the liquid composite which has been applied on the metal surface by spraying.

7. The method according to claim 1, wherein the dry film is formed by electropolymerization.

8. The method according to claim 1, wherein the dry film is formed by electrophoretic deposition of the intrinsically conductive polymer.

9. The method according to claim 1, wherein the dry film is formed by electrophoretic deposition of the intrinsically conductive polymer in the presence of at least one solid lubricant.

10. The method according to claim 1, wherein the intrinsically conductive polymer is polyaniline, in a concentration in a range of about 1% to about 20% by weight of the dry film.

11. The method according to claim 1, wherein the intrinsically conductive polymer is a ring-substituted polyaniline, a nitrogen-substituted polyaniline, or a polyaniline copolymer in a concentration in a range of about 1% to about 20% by weight of the dry film.

12. The method according to claim 2, wherein the solid lubricant is molybdenum disulfide.

13. The method according to claim 2, wherein the solid lubricant is graphite.

14. The method according to claim 12, wherein the intrinsically conductive polymer is polyaniline in its emeraldine base form, in a polyaniline-to-molybdenum disulfide weight ratio of about 1:4 to about 1:2.

15. The method according to claim 14, wherein the emeraldine and the molybdenum disulfide are dissolved in fifty parts by weight of N-methylpyrrolidone solvent.

16. The method according to claim 4, wherein plural layers of the liquid composite are successively applied, a first layer being applied directly to the metal surface to form the dry film, and each successive layer being applied over a previous layer when the previous layer has dried.

17. The method according to claim 16, wherein about 5 to about 20 twenty layers of the liquid composite are successively applied.

18. The method according to claim 16, wherein the thickness of each of the layers is about 1 to about 2 micrometers.

19. The method according to claim 1, wherein a conversion coating is provided on the metal surface before said step of providing the dry film.

20. The method according to claim 19, wherein the conversion coating is selected from the group consisting of manganese phosphate, zinc phosphate, and oxalate.

21. The method according to claim 1, wherein a conversion coating and the conducting polymer are co-deposited on the metal surface.

22. The method according to claim 21, wherein the conversion coating is selected from the group consisting of manganese phosphate, zinc phosphate, and oxalate.

23. A composition for protecting a metal surface from galling and corrosion, said composition comprising:

a binding intrinsically conductive polymer with lubricant properties; and

a solid lubricant.

24. The composition according to claim 23, wherein said intrinsically conductive polymer is polyaniline or a chemical modification of polyaniline in any of its oxidation states, in a concentration in a range of about 1% to about 20% by weight of said composition.

25. The composition according to claim 23, wherein said intrinsically conductive polymer is sulfonated polyaniline having any degree of sulfonation, in a concentration in a range of about 1% to about 20% by weight of said composition.

26. The composition according to claim 23, wherein said solid lubricant is molybdenum disulfide.

27. The composition according to claim 23, wherein said solid lubricant is graphite.

28. The composition according to claim 26, wherein said intrinsically conductive polymer is polyaniline in its emeraldine base form, in a polyaniline-to-molybdenum disulfide weight ratio of about 1:4 to about 1:2.

29. The composition according to claim 28, wherein the emeraldine and the molybdenum disulfide are dissolved in fifty parts by weight of N-methylpyrrolidone solvent.

30. An improved metal threaded connection that is resistant to corrosion and galling, comprising:

a phosphatized female threaded part having a first surface provided with a dry film comprising intrinsically conductive polyaniline and molybdenum disulfide; and

a male threaded part having a second surface to be in contact with the first surface, the second surface being provided with a dry film comprising intrinsically conductive polyaniline.